Castilleja

A Publication of the Wyoming Native Plant Society
www.uwyo.edu/wyndd/wnps/wnps_home.htm

December 2001
Volume 20, No. 4

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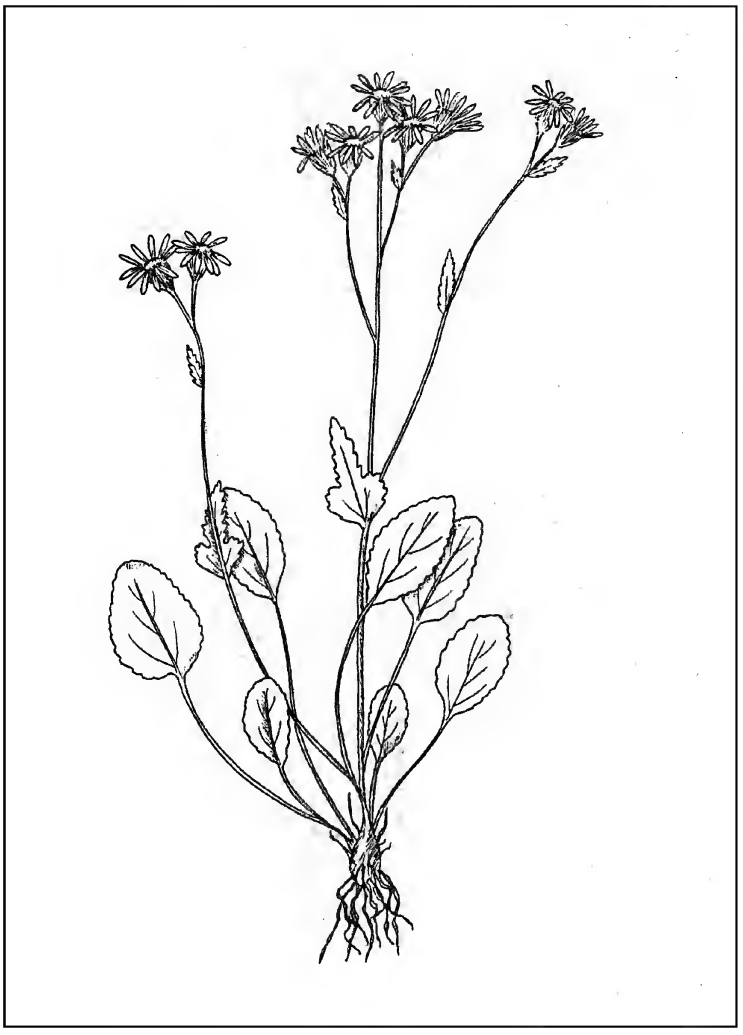
Changing Times, Changing Floras

By Walter Fertig

***Vascular Plants of Wyoming, third edition* By Robert D. Dorn. Mountain West Publ., Cheyenne, WY.** Distributed by the Rocky Mountain Herbarium, Dept. of Botany, University of Wyoming, Laramie, WY 82071-3165 (www.rmh.uwyo.edu). $20 (shipping included in the USA + Wyoming orders add sales tax for your county; 4%-$.80, 5%-$1.00, 6%-$1.20) payable to the Rocky Mountain Herbarium.

I am a confirmed bibliophile, and among my favorite books are floras and botanical keys. I especially enjoy the older works, not because I use them for keying out plant specimens anymore, but because they provide a link to the not-so-distant past. Just like plants themselves, floras and manuals evolve over time (although perhaps at a faster tempo) to reflect changes in taxonomic thought and improvements in our knowledge of plant geography. Trends emerge over time, with floras often expanding and contracting depending on whether [**continued on page 3**]



Above: Payson's groundsel (*Senecio dimorphophyllus*) has a "new" name - *Packera dimorphophylla*. Recent genetic studies in the genus *Senecio* (often considered one of the world's largest genera with over 1500 species) indicate that it is not a natural group and should be subdivided. In Dorn's newly revised Vascular Plants of Wyoming, the state's 42 taxa of "*Senecio*" are split into 4 genera: *Ligularia, Tephroseris, Packera,* and *Senecio* (sensu stricto). Illustration by Walter Fertig

WNPS NEWS

2002 Student Scholarship: The Society's annual scholarship is available for qualified undergraduate or graduate students studying any aspect of the botany of native plants found in Wyoming. One to three scholarships will be awarded in the amount of $300-500, each. Interested students are encouraged to contact Joy Handley (thuja@uwyo.edu), the current Society President or visit the WNPS web site for an application and additional information. Applications are due by 22 February 2002. Awardees will be determined by the Board in March.

2002 Wyoming Plant Conservation Conference: See the agenda on page 9. Please register early!

Reminder: First Annual Wyoming Native Plant Society Photo Contest: The WNPS is sponsoring a photo contest featuring Wyoming native plants. Entries may be single plants, populations, or even landscapes. In fact, almost anything goes as long as the slides feature native plants. The contest opens January 1st, 2002 and closes March 31st. Slides will be judged on content, clarity, creativity, and originality, and the winning shot will be displayed in the May issue of *Castilleja*. Send your winning slides (correctly labeled, and up to 5 entries) with a self-addressed and stamped envelope to WNPS Photo Contest, P.O. Box 3452, Laramie, WY 82071 to claim the fame, glory, $25 prize and 1-year free subscription to *Castilleja*.

Castilleja Hits the Library Circuit: One-time complementary copies of this *Castilleja* Newsletter issue are offered to each County Public Library in Wyoming as a primary news and information source on Wyoming plants. Look for this issue at the county library nearest you, and mention it to others if you consider it a worthwhile addition to local information resources.

Call for Nominees: President, Vice-president, secretary-treasurer, and one Board position are up for nomination. If you are interested or know of others who may be interested in these one-year positions, please send your name and address to Joy Handley, WNPS. A ballot will appear in the May issue.

Treasurer's Report: Balance as of 17 December 2001: General Fund $918.71; 2001-2002 Student Scholarship Fund $775.00; Total funds: $1,693.71.

New Members: Please welcome the following new members of WNPS: Diantha States (Lander), and Joan Borst (Sheridan).

Wyoming Native Plant Society
PO Box 3452, Laramie, WY 82071

President: Joy Handley (Laramie)
Vice President: Nina Haas (Cheyenne)
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Teton Chapter: PO Box 82, Wilson, WY 83014 (Joan Lucas, Treasurer).

Bighorn Native Plant Society: PO Box 21, Big Horn, WY 82833 (Jean Daly)

Contributors to this issue: John Baxter (JB), Walter Fertig (WF), Joy Handley, Ronald Hartman (RH), Bonnie Heidel (BH), Isobel Nichols, Stuart Markow (SM) and Richard Scott. The next deadline for newsletter material is 16 February 2002.

Botany Briefs

Lawsuit filed to list Desert yellowhead under ESA The Desert yellowhead (*Yermo xanthocephalus*) was proposed for listing as Threatened under the Endangered Species Act by the US Fish and Wildlife Service in October 1998. After soliciting public comment the service determined the plant to be warranted for listing in 1999, but took no additional action to finalize a ruling. In November, a coalition of conservation groups including Biodiversity Associates, Biodiversity Legal Foundation, Center for Native Ecosystems, Earth Justice Legal Foundation, and the Wyoming Outdoor Council, filed a lawsuit to force USFWS to complete the listing procedure. According to Biodiversity Associates spokesman Jeff Kessler "This plant is found nowhere else on the planet and ... is as much a part of Wyoming's natural heritage as any other species of wildlife or plant. The extremely small size of this one known population makes the species particularly vulnerable to extinction. The USFWS has failed to meet their ethical and legal obligations to provide protections this rare plant needs ... and through our lawsuit, we are seeking that protection". Desert yellowhead occupies less than 10 acres of habitat at one known population in Fremont County, WY and is potentially threatened by oil and gas development and off-road vehicle recreation. WF
Reference: Conversationalists [sic] file lawsuit to save rare plant, *Casper Star-Tribune*, 19 Nov. 2001.

Changing Times, Changing Floras (continued from page 1)

taxonomic "splitters" or "lumpers" are in ascendancy. Throughout, though, floras and manuals strive to capture the state of the science at the time of their publication.

Floras, unfortunately, also get out of date quickly. Such was the case with Robert Dorn's second edition of *Vascular Plants of Wyoming*, which first appeared in 1992. Since its publication, over 100 new plant species have been documented in the state and numerous changes in nomenclature and familial relationships have occurred. Perhaps against his better judgment (and with some prodding from one semi-anonymous reviewer), Dorn began the unenviable task of revising his flora during the past year. The result is the completely revised third edition, now available for holiday giving.

Readers familiar with Dorn's earlier floras may be in for quite a surprise when they see the significant taxonomic changes introduced in this new volume. Nineteen new families are recognized for the state, including 12 split out of the Liliaceae (see table 1). The Caprifoliaceae has undergone significant revision, with *Linnaea* (twinflower) now placed in its own family and *Sambucus* and *Viburnum* transferred to the *Adoxaceae.* Primulaceae has also been reduced, with *Glaux* and *Lysimachia* moving to the Myrsinaceae, a family that until recently consisted mostly of tropical trees, shrubs, and lianas.

Even more significant nomenclatural changes have occurred at the genus level. Gone are familiar genera such as *Aster, Haplopappus, Stipa, Kochia, Habenaria,* and *Leptodactylon,* only to be replaced by less familiar names like *Almutaster, Eurybia, Rayjacksonia, Oreochrysum, Nassella, Platanthera,* and *Leptosiphon.* Other genera, such as *Arabis, Arenaria, Senecio, Hymenoxys, Oryzopsis,* and *Scirpus* have been significantly reduced due to transfer of species into new or existing genera. In all, Dorn has adopted over 75 genus-level changes in the new flora. The families that are most significantly affected by these changes are the Asteraceae, Brassicaceae, Caryophyllaceae, Cyperaceae, Orchidaceae, Poaceae, and Polemoniaceae.

Over 300 name changes have been adopted at the level of species and variety. 47 new combinations were made by Dorn himself to bring names into compliance with his revised taxonomic system. Hundreds more were adopted from recent monographs and taxonomic revisions, many of which are related to the ongoing *Flora of North America* effort. Over 100 new species were added to the flora as well, reflecting the significant collecting efforts by staff and graduate students of the Rocky Mountain Herbarium (RM), state natural heritage program, consultants, and Dorn himself over the last decade.

Non-systematists and conservative taxonomists may cringe at the magnitude of change adopted in the new

Vital Statistics
▪ Keys to 142 families, 723 genera, 2509 species, 2800 unique taxa
▪ Descriptions for families and genera
▪ Relatively detailed distributional data
▪ 5 3/8 inches wide, 8 1/2 inches long, 13/16 inch thick
▪ Paper cover with signature stitched binding

RH

edition of *Vascular Plants of Wyoming.* Dorn himself seems a little sheepish about the subject in the introduction to the *third edition.* In fairness, many of these taxonomic changes have already been adopted by other recent national and regional floras, such as the *Flora of North America* and the *Intermountain Flora.* In other cases, Dorn is merely resurrecting names that were in common use two generations ago and which are well supported by modern biosystematic studies. As Dorn points out in the introduction, one has only to consult the classic 1909 Coulter and Nelson *New Manual of Botany of the Central Rocky Mountains* to find such "new" entities as *Oonopsis, Pyrrocoma, Stenotus, Tonestus, Oreochrysum, Ionactis, Moehringia, Coeloglossum, Piperia,* Melanthaceae, Convallariaceae, and Smilacaceae. If anything, Dorn's previous floras have probably been overly conservative in their treatment of certain genera in the Asteraceae (especially *Haplopappus*) and Caryophyllaceae (*Arenaria*).

Dorn is correct, too, in questioning some of the instability that has arisen from recent taxonomic revisions based on genetic studies employing small sample sizes. Studies that show genetic evidence for splitting up such "look-alike" genera as *Packera-Senecio, Oryzopsis-Achnatherum-Piptatherum,* and the various *Aster* segregates, may be less compelling in the future if systematists utilize different genetic markers or truly adopt rigorous statistical sampling procedures (the biggest transgression in modern systematics in my opinion). Those who pine for a stable nomenclature are in for a big disappointment over the next several decades as advances in cladistics and molecular taxonomy will likely necessitate even more changes in familiar groups such as the Scrophulariaceae, Chenopodiaceae, and *Carex.*

Dorn should be given credit for using his years of field training and keen knowledge of rules of nomenclature and the literature for not adopting an even larger number of potential changes. In the appendix, Dorn briefly discusses the sources he has used for adopting or rejecting taxonomic changes that have appeared in the recent literature. In many cases he has wisely chosen to avoid changes that are based on spurious evidence or taxonomic characters that do not apply to actual Wyoming material. Dorn has also resisted the temptation of accepting new species for the

state flora from recent national checklists (such as the works of Kartesz and PLANTS) that are less than rigorous in examining the veracity of reports from old floras and monographs. There will still be cases where individual taxonomists may disagree with Dorn's assessment of a given species (for example, I would follow the *Flora of North America* and not recognize the varieties of *Ranunculus cymbalaria* as significant), but at least Dorn has offered justification for his opinions in the appendix. Far more often than not, Dorn's assessments are sound, as when he rejects *Gymnocarpium disjunctum, Lepidium paysonii, Potamogeton foliosus* var. *fibrillosus, Typha domingensis, Aquilegia coerulea* var. *alpina, Draba porsildii* var. *brevicula* and other taxonomically negligible species. Unfortunately, Dorn does not reprint taxonomic notes from his previous two editions of the flora, forcing interested readers to find copies of the older works that are now (or soon to be) out of print.

One of the most positive changes in the *third edition* is the revision of the state distribution data for each species. Unlike previous editions where ranges were coded by 10 geographic subunits of the state, the new work includes a list of every county where a specimen has been documented at the Rocky Mountain Herbarium or in a monograph. For brevity, geographic subunits are still employed for wide-ranging species, but the units can be easily translated into their constituent counties with a chart and map at the back of the book. Dorn continues his practice of recognizing Yellowstone National Park as a county, even though it technically is divided between Teton and Park counties. I have to disagree, however, with Dorn's reluctance to accept Yellowstone records from outside of the RM and his perpetuation of a common myth that the park is under-collected. Yellowstone Park maintains an extensive herbarium collection that contains numerous local distribution records that have not been included in the new flora. Yellowstone has also been extensively collected in the past, with two major historical floras published by Bessey and Rydberg, and more recent checklists and floras published or in progress by Don Despain, Jennifer Whipple (*Western North American Naturalist* 2001, vol 61:336-346) and Erwin Evert.

Floras change over time (often too quickly for the comfort of many) and invariably become outdated before the ink is dry at the printshop. We have been very fortunate in Wyoming to have Robert Dorn put so much effort into writing and updating the *Vascular Flora of Wyoming* for these many years. Few other states can boast such a comprehensive and current assessment of their botanical resources. Bob has insisted that this will be his last revision of the flora, as he shifts his attention to other projects (next up, a treatment of his beloved Salicaceae for the San Juan Basin flora). Of course, he told me the same thing on dozens of occasions between 1993 and 2000. I am confident that once next field season arrives and the first new species for the state is discovered Dorn will commence work on the revised fourth edition of the *Vascular Plants of Wyoming*.

"Every other botanist may aspire for praise, but the plant taxonomist can only hope to escape reproach."
Samuel Johnson 1709 -1784

Table 1. Major Taxonomic Changes Introduced in *Vascular Plants of Wyoming, third edition.*

I. New Families

Aizoaceae (*Sesuvium*) new to WY
Alliaceae (*Allium*) segregate from Liliaceae
Anthericaceae (*Leucocrinum*) segregate from Liliaceae
Asparagaceae (*Asparagus*) segregate from Liliaceae
Calochortaceae (*Calochortus, Prosartes, Streptopus*) segregate from Liliaceae
Celtidaceae (*Celtis*) segregate from Ulmaceae
Convallariaceae (*Maianthemum, Polygonatum*) segregate from Liliaceae
Hemerocallidaceae (*Hemerocallis*) new to WY and segregate from Liliaceae
Hyacinthaceae (*Camassia*) segregate from Liliaceae
Linnaeaceae (*Linnaea*) segregate from Caprifoliaceae
Melanthiaceae (*Veratrum, Xerophyllum, Zigadenus*) segregate from Liliaceae
Myrsinaceae (*Glaux, Lysimachia*) family previously not known from WY, but reconstituted with additions from Primulaceae.
Parnassiaceae (*Parnassia*) segregate from Saxifragaceae
Sarcobataceae (*Sarcobatus*) segregate from Chenopodiaceae
Scheuchzeriaceae (*Scheuchzeria*) new to WY
Smilacaceae (*Smilax*) segregate from Liliaceae
Themidaceae (*Androstephium, Triteleia*) segregate from Liliaceae
Tofieldiaceae (*Tofieldia*) segregate from Liliaceae
Trilliaceae (*Trillium*) segregate from Liliaceae

II. New genera

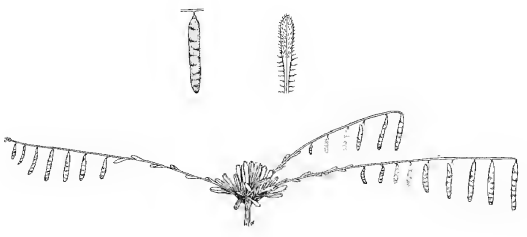
Achnatherum (Poaceae) formerly in *Oryzopsis & Stipa*
Aliciella (Polemoniaceae) formerly in *Gilia*
Almutaster (Asteraceae) formerly in *Aster*
Amerorchis (Orchidaceae) formerly in *Orchis*
Amphiscirpus (Cyperaceae) formerly in *Scirpus*
Anthriscus (Apiaceae) new to WY
Boechera (Brassicaceae) formerly in *Arabis*
Bolboschoenus (Cyperaceae) formerly in *Scirpus*
Braya (Brassicaceae) new to WY
Carthamus (Asteraceae) new to WY
Chamaesyce (Euphorbiaceae) formerly in *Euphorbia*
Chamerion (Onagraceae) formerly in *Epilobium*
Cistanthe (Portulacaceae) new genus for *Calyptridium & Spraguea*
Coeloglossum (Orchidaceae) formerly in *Habenaria*
Dichanthelium (Poaceae) formerly in *Panicum*

Digitalis (Scrophulariaceae) new to WY
Diphasiastrum (Lycopodiaceae) formerly in *Lycopodium*
Dulichium (Cyperaceae) new to WY
Eremogene (Caryophyllaceae) formerly in *Arenaria*
Ericameria (Asteraceae) formerly in *Chrysothamnus* & *Haplopappus*
Eucephalus (Asteraceae) formerly in *Aster*
Eupatoriadelphus (Asteraceae) formerly in *Eupatorium*
Eurybia (Asteraceae) formerly in *Aster*
Euthamia (Asteraceae) formerly in *Solidago*
Falcaria (Apiaceae) new to WY
Frasera (Gentianaceae) formerly in *Swertia*
Gentianopsis (Gentianaceae) formerly in *Gentianella*
Hesperostipa (Poaceae) formerly in *Stipa*
Hibiscus (Malvaceae) new to WY
Holosteum (Caryophyllaceae) new to WY
Hornungia (Brassicaceae) formerly in *Hutchinsia*
Ionactis (Asteraceae) formerly in *Aster*
Lathrocasis (Polemoniaceae) formerly in *Gilia*
Leptosiphon (Polemoniaceae) formerly in *Linanthus*
Ligularia (Asteraceae) formerly in *Senecio*
Lipocarpha (Cyperaceae) formerly *Hemicarpha*
Logfia (Asteraceae) formerly in *Filago*
Minuartia (Caryophyllaceae) formerly in *Arenaria*
Moehringia (Caryophyllaceae) formerly in *Arenaria*
Nassella (Poaceae) formerly in *Stipa*
Nasturtium (Brassicaceae) formerly in *Rorippa*
Noccaea (Brassicaceae) formerly in *Thlaspi*
Oonopsis (Asteraceae) formerly in *Haplopappus*
Oreochrysum (Asteraceae) formerly in *Haplopappus*
Oreostemma (Asteraceae) formerly in *Aster*
Packera (Asteraceae) formerly in *Senecio*
Phaseolus (Fabaceae) new to WY
Piperia (Orchidaceae) formerly in *Habenaria*
Piptatherum (Poaceae) formerly in *Oryzopsis*
Platanthera (Orchidaceae) formerly in *Habenaria*
Prosartes (Calochortaceae) formerly in *Disporum*
Pseudognaphalium (Asteraceae) formerly in *Gnaphalium*
Pseudostellaria (Caryophyllaceae) formerly in *Stellaria*
Pyrrocoma (Asteraceae) formerly in *Haplopappus*
Pyrus (Rosaceae) = *Malus*
Rayjacksonia (Asteraceae) formerly in *Haplopappus*
Scheuchzeria (Scheuchzeriaceae) new to WY
Schizachyrium (Poaceae) formerly in *Andropogon*
Schoenoplectus (Cyperaceae) formerly in *Scirpus*
Sesuvium (Aizoaceae) new to WY
Sinapis (Brassicaceae) formerly in *Brassica*
Stenosiphon (Onagraceae) new to WY
Stenotus (Asteraceae) formerly in *Haplopappus*
Stuckenia (Potamogetonaceae) formerly in *Potamogeton*
Symphyotrichum (Asteraceae) formerly in *Aster*
Tephroseris (Asteraceae) formerly in *Senecio*
Tetraneuris (Asteraceae) formerly in *Haplopappus*
Tonestus (Asteraceae) formerly in *Haplopappus*
Trichophorum (Cyperaceae) formerly in *Scirpus*
Tripterocalyx (Nyctaginaceae) formerly in *Abronia*
Vulpia (Poaceae) formerly in *Festuca*

III. Lost genera
Aster (Asteraceae) = *Almutaster, Eucephalus, Eurybia, Ionactis, Oreostemma, & Symphyotrichum*
Boisduvalia (Onagraceae) = *Epilobium*
Calyptridium (Portulacaceae) = *Cistanthe*
Habenaria (Orchidaceae) = *Coeloglossum, Piperia, Platanthera*
Haplopappus (Asteraceae) = *Ericameria, Machaeranthera, Oonopsis, Oreochrysum, Pyrrocoma, Rayjacksonia, Stenotus, & Tonestus*
Kochia (Chenopodiaceae) = *Bassia*
Leptodactylon (Polemoniaceae) = *Linanthus*
Orchis (Orchidaceae) = *Amerorchis*
Spraguea (Portulacaceae) = *Cistanthe*
Stipa (Poaceae) = *Achantherum, Hesperostipa, & Nassella*
Zauschneria (Onagraceae) = *Epilobium*

IV. Lost Taxa
Aconitum columbianum (Ranunculaceae) vars no longer recognized
Alnus viridis var. *crispa* (Betulaceae) = var. *sinuata*
Botrychium simplex (Ophioglossaceae) vars no longer recognized
Cirsium arvense (Asteraceae) vars no longer recognized
Erigeron formosissimus (Asteraceae) vars no longer recognized
Habenaria [*Platanthera*] *hyperborea* (Orchidaceae) split into *P. aquilonis* & *P. huronensis*
Juncus tracyi (Juncaceae) = *J. ensifolius*
Physaria integrifolia (Brassicaceae) vars no longer recognized
Populus balsamifera (Salicaceae) vars no longer recognized
Ranunculus circinatus (Ranunculaceae) = *R. aquatilis* var. *diffusus*
Ranunculus longirostrus (Ranunculaceae) = *R. aquatilis* var. *diffusus*
Ranunculus occidentalis var. *dissectus* (Ranunculaceae) falsely reported for WY
Ranunculus uncinatus (Ranunculaceae) vars no longer recognized
Salix monochroma (Salicaceae) falsely reported for WY
Salix planifolia (Salicaceae) vars no longer recognized
Senecio megacephalus (Asteraceae) falsely reported for WY
Triglochin concinnum (Juncaginaceae) = *T. maritima*
Vaccinium globulare (Ericaceae) = *V. membranaceum*

Below: *Boechera pusilla* (formerly *Arabis pusilla*) by Isobel Nichols.

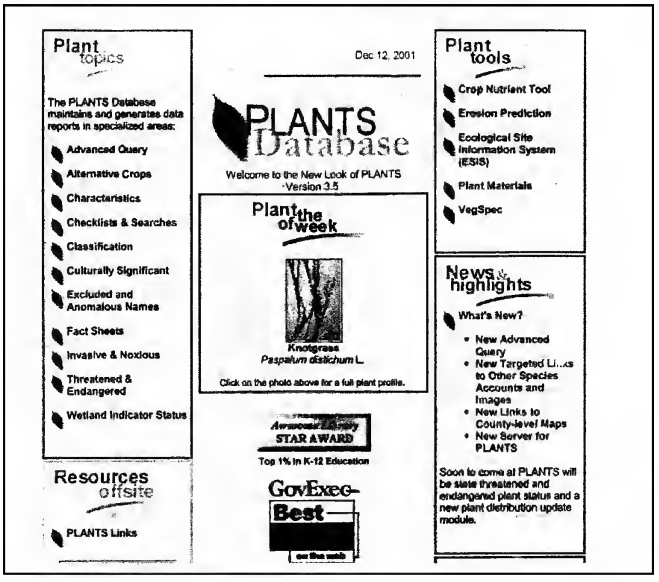


Keeping Up With Name Changes

Fact of life: scientific names will continue to change whether you want them to or not. This situation actually reflects a healthy state of affairs, as new information and more sophisticated techniques for assessing relationships help generate revised classification schemes with consequent name changes. However, such reshuffling often places a burden on people in resource management and others who have learned a plant by a particular name, and are not sure what the current nomenclature is or how to go about finding out.

The good news is, such information is readily available via the internet. Below are the addresses of some sites that provide this kind of information. They can be accessed using any computer hooked up to the world wide web. For people not familiar with computers and how to use them, most public libraries now have them, and a librarian can show users how to log on.

I. PLANTS database http://plants.usda.gov



This site lists all plants known to North America north of Mexico (including Greenland which is 90% ice-covered), and provides scientific name, common name, and synonyms (alternative names which apply to the same organism). In addition, the site provides a wide variety of other kinds of information including native/non-native status, wetland indicator status, distribution, Threatened/Endangered status, cultural significance, ecological information, plant of the week, and on and on and on.

A word of caution: the names used are not necessarily the "best" or even the most widely accepted. Rather, they are the names determined to be "correct" by one person (John Kartesz), whose decisions are often hotly contested by other taxonomists. However, the database does provide complete synonymy so users can almost always search for and find a plant name, then make his/her own decision as to which name to use.

II. Rocky Mountain Herbarium databases
http://www.rmh.uwyo.edu/species/wysynlst.pdf
(Checklist with Recent Synonymy)
http://www.rmh.uwyo.edu/species/wycklt.pdf
(Checklist with Common Names)

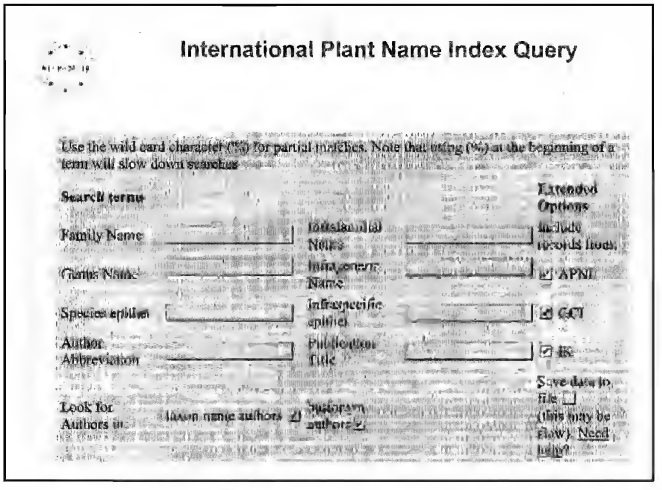
Checklist with Recent Synonymy of the Vascular Plants of Wyoming, B. E. Nelson and R. L. Hartman, Feb 1997

ISOËTACEAE (ISO)

ISOËTES
bolanderi Engelm.
var. bolanderi
[I. bolanderi Engelm.] FNA
occidentalis L. Henderson
[I. lacustris L.]
*[I. l. var. paupercula Engelm.] H1, SCS

The **Checklist with Recent Synonymy** provides a list of all plants known to Wyoming, along with any synonyms that may apply. The **Checklist with Common Names** provides the same list along with the common names and the equivalent name (if different) in PLANTS database and *Flora of North America*. These lists were generated by staff at the Rocky Mountain Herbarium at the University of Wyoming, and the nomenclature generally reflects more mainstream taxonomy than does the PLANTS database.

III. International Plant Name Index http://www.ipni.org



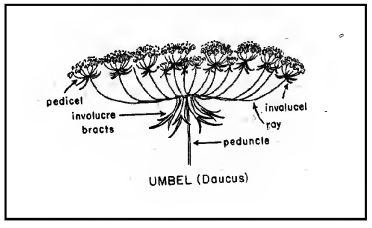
This site is a good place to look for the article in which a name was published. Such articles generally provide the rationale for name changes (if any), as well as keys for distinguishing similar taxa. Many of these publications are rarely found outside of academic institutions, but usually may be obtained through inter-library loan. Any librarian can help with this endeavor. SM

Small World

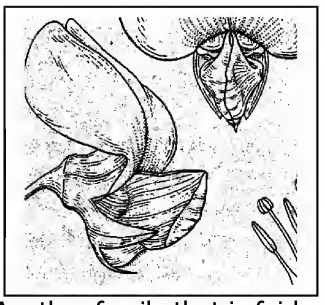
"A Message from the President"
By Joy Handley

Some people have described the countryside as a "desert" and the winters are notoriously cold. The landscape is desolate and the region has suffered from drought in recent years. One of the main forms of transportation is by four-legged animal.

The above description could fit many easterners' concept of Wyoming, or it could apply to a journalist's narrative of Afghanistan. Most of us have probably heard and read more about Afghanistan in the last few months than we previously had in our entire lives. Portrayals of the people, culture, politics, and history abound. Of course, there are many differences between this faraway country and The Equality State, but there are many similarities as well, not the least of which may be encountered in the botanical sense.



If we examine just one plant family, Apiaceae (or Umbelliferae), we discover that, of the 24 genera known to be found here in Wyoming, nine (37.5%) are also encountered in Afghanistan: *Angelica*, *Berula*, *Bupleurum*, *Carum*, *Conium*, *Daucus*, *Heracleum*, *Ligusticum*, and *Sium*. Not only that, but we also share four species. *Berula erecta* (*B. angustifolia* in some classifications) is a common member of wetland communities. Caraway (*Carum carvi*) is an introduced species in Wyoming, the "seeds" of which have long been used to flavor breads, cheese, and an array of other foods. The infamous poison hemlock (*Conium maculatum*), reputed to have killed Socrates, is another shared species. One more species introduced to Wyoming is *Daucus carota*, the 'umble carrot'. In fact, the carrot is thought to have been first domesticated in Afghanistan.



Another family that is fairly well represented in The Cowboy State is Fabaceae, also known as Leguminosae. Members of this family form symbiotic relationships with nitrogen-fixing species in the bacterial genus *Rhizobium*, which help keep soil fertility on an even keel. Of the 22 genera represented in Wyoming, 14 (63.7%) are also in Afghanistan: *Astragalus*, *Caragana*, *Glycyrrhiza*, *Hedysarum*, *Lathyrus*, *Lotus*, *Medicago*, *Onobrychis*, *Oxytropis*, *Sophora*, *Sphaerophysa*, *Trifolium*, and *Vicia*. Within these genera, we have 12 species in common; many of which have long been cultivated and widely introduced here for agricultural purposes. Slender bird's-foot trefoil (*Lotus corniculatus*) is a fodder crop, which has become naturalized. *Medicago polymorpha* (bur-clover) and *M. lupulina* (black medic) are also used as fodder and green manure. Alfalfa (*Medicago sativa*) and white and yellow sweet clover (*Melilotus albus* and *M. officinalis*, respectively) are all well known as forage crops and for honey production, for those who like their sweetener "on the wing". Both *Oxytropis riparia* (Oxus oxytrope) and *Trifolium fragiferum* (strawberry clover) are introduced alkaline-tolerants. *Trifolium pratense*, or red clover, and *T. repens*, the famed "shamrock clover", like many members of their genus, are useful for forage, crop rotation, and provide the standard honey type found at the grocery store. Hairy vetch (*Vicia villosa*) has become somewhat weedy in Wyoming, but the presence of Swainsonpea (*Sphaerophysa salsula*) is the red banner for a serious weed problem.

Wyoming only has two genera in the family Anacardiaceae and of these we share the genus *Rhus* with Afghanistan. The reason I considered this family to be of interest is because it includes pistachios (genus *Pistacia*), which grow wild in the northern part of Afghanistan and many of us enjoy in ice cream, pudding, or by the handful.

In a nutshell, we will likely be learning more about Afghanistan in the foreseeable future and as botanists we may find some of the particulars of its flora interesting. *Flora Iranica* (K. H. Rechinger), *Vascular Plants of Wyoming* (R. D. Dorn), *Intermountain Flora* (A. Cronquist et al.), and *The Plant-Book* (D. J. Mabberley) provided much of the information for this article, and are all available for reference at the Rocky Mountain Herbarium. If you would like to find out more about the flora of Afghanistan or any other region, or if you are interested in any particular plant taxa, the Rocky Mountain Herbarium has an unrivaled collection of botanical resources.

POSITION AVAILABLE
Graduate Study in Floristics
Rocky Mountain Herbarium

By Ronald Hartman

The Rocky Mountain Herbarium (RM), University of Wyoming, seeks students interested in pursuing a M.S. degree in broad-scale floristics. The successful applicants are expected to be energetic, highly motivated individuals capable of working with limited supervision for extended periods of time. A member of the staff will spend 2 to 4 weeks each summer assisting with collecting. Beginning Spring 2002, Santa Fe National Forest including Valles Caldera National Preserve (totaling 2,600 mi^2; parts of Los Alamos, Mora, Rio Arriba, Sandoval, San Miguel, Santa Fe cos.; n.-cent. NM) will fund two summers of fieldwork, provide housing, and provide space for the processing of specimens. Likewise, the Medicine Bow National Forest will fund work on the Thunder Basin National Grassland and vicinity (1,500 mi^2; parts of Campbell, Crook, Niobrara, Weston cos.; ne. WY). The recipients must compete successfully for a teaching assistantship in the Department of Botany.

Other inventories planned include the w. Rio Grande and adjacent San Juan NFs, BLM lands–Montrose District, s. one-third of e. Colorado (Comanche National Grassland); Buffalo Gap National Grassland, SD; and the e. slope, Wind River Range, WY.

The Rocky Mountain Herbarium has completed 36 intensive inventories in Colorado, Idaho, New Mexico, South Dakota, Utah, Washington, and Wyoming over the past two decades with the goal of producing a critical flora of the Rocky Mountain region. The areas studied range from 1,300 mi^2 (extremely mountainous) to 7,000 mi^2 (plains and basins); numbered vouchers collected vary from 9,000 to 12,000 (record: 20,585, s.-cent. CO). Emphasis has been on documenting species of conservation concern, invasives, and vascular plants in general. Associated data are stored in a Microsoft Access database (370,000+ records) for use with GIS in predictive modeling, ground truthing of remotely sensed areas, managing species of conservation concern, documenting invasives and noxious weeds, etc.

For further information on the institution, projects, and products, refer to The Rocky Mountain Herbarium website <http://www.rmh.uwyo.edu>, and contact Ronald L. Hartman, Rocky Mountain Herbarium, Department of Botany, University of Wyoming, Laramie, Wyoming 82071-3165; rhartman@uwyo.edu; 307/766-2236; FAX 307/766-2851.

Deadline for Graduate Applications, 15 February 2002.

CWC Herbarium Moves

By Richard Scott

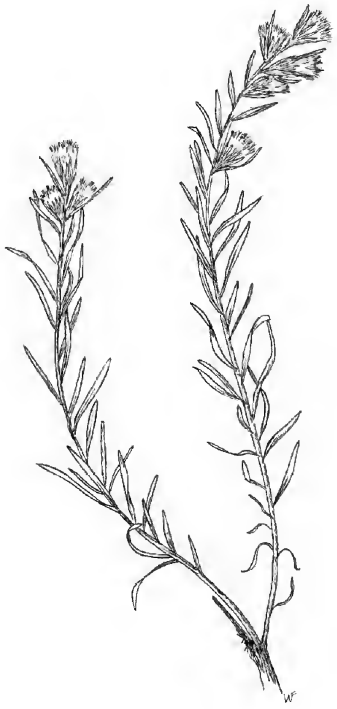
The Central Wyoming University Herbarium (CWC), an accession of 40,000+ specimens, is in a new facility and open for business at 1446 Cowboy Lane, Riverton, Wyoming, 82501 (phone: 307-857-3140). Regular hours are 9-5, Monday-Friday, with special arrangements possible.

The herbarium is now at 40,000+ specimens of vascular plants and about 1000 lichens and mosses. About half of the records are in a database, and there are plans for a webpage. While the collection is a general one, there are concentrations and special interests in weedy plants, alpine plants, Fremont County and Wyoming plants, and plants of the West. Major publications in progress at the herbarium are volumes 2 and 3 of the Alpine Flora of the Rocky Mountains; The Spring Flora of Fremont County, Wyoming; A Flora of the Shoshone National Forest.

There is workspace available, binocular microscopes, and computers with internet access, in addition to a small library with manuals and floras of western states and other regions, a map collection with hardcopy and software maps, and a small periodical collection of a 1000+ reprints and articles.

Thanks are extended to the Fremont County Weed and Pest District for designing a new building around the herbarium and providing office and work space. For further information, contact me at CWC (address and phone, above) or via email (drscott@direcpc.com).

Below: *Ericameria discoidea*, formerly *Haplopappus macronema*, by Walter Fertig.



Preliminary Agenda

Biological Diversity of Sagebrush Landscapes
2002 Wyoming Plant Conservation Conference

The biennial Wyoming Plant Conservation Conference is set for March 19-21, in Laramie, WY, at the Holiday Inn. Sessions on "Biological Diversity of Sagebrush Landscapes" will be featured, in addition to open botany sessions that include presentations on the flora and ecology of the region, and the Species Status Review Workshop on Wyoming rare plant species. Watch for a separate mailing with the complete agenda and local hotel information. BH

Sponsors: Wyoming Native Plant Society, Rocky Mountain Herbarium, Wyoming Rare Plant Technical Committee, Bureau of Land Management, U.S. Forest Service, National Park Service, Wyoming Natural Diversity Database

SESSIONS 1 and 2 – Biological Diversity of Sagebrush Landscapes - Session 1 Moderator: Ronald Hartman, UW (Tuesday, March 19, 1:00 – 5:00 pm and Wednesday, March 20, 8:00 – 12:00 am)

Speaker	Topic
Dennis Knight (UW; tentative)	Sagebrush systems across Wyoming's mountains and plains
Alma Winward (USFS – Ogden)	Not all sagebrushes are created equal
Robert Dorn (UW)	Historical perspectives on Wyoming sagebrush landscapes
George Jones (WYNDD)	Uncommon sagebrush vegetation of Wyoming
Roger Rosentreter (BLM-Boise)	Decline of Wyoming sagebrush in Idaho; is Wyoming next?
Tom Rinkes (BLM-Cheyenne)	The BLM Sagebrush Initiative in Wyoming
Walter Fertig (UW)	Gap analysis of the flora of Wyoming
Gregory Brown (UW)	Genetics of the Colorado Butterfly plant, *Gaura neomexicana* var. *coloradensis*
Susan Meyer (USFS-Ogden)	Patterns of diversity and endemism in three large Intermountain genera (*Penstemon, Eriogonum,* and *Astragalus*)
Gary Beauvais (WYNDD)	Faunal diversity linked to sagebrush
Roger Rosentreter (BLM-Boise)	The roles of microbiotic crusts in sagebrush landscapes
Steven Miller (UW)	Fairy rings on the High Plains
Tom Wittson (Ext. Serv.)	Integrated systems approach to restoring sagebrush habitat biodiversity

SESSION 3—General Session (Wednesday, March 21, 1-4 pm) followed by workshop and reception

SESSION 4 – Species Status Review Workshop (Thursday, March 22, 8:00-12:00 am)

Registration – 2002 Wyoming Plant Conservation Conference

Name(s):_____

Address:_____

_____

Phone:_____ Email:_____

Registration*	Regular	Student	# of registrants	TOTAL
Early (by 8 March)	$8.00	$6.00		
At Conference	$12.00	$8.00		

*Make check out to: Wyoming Native Plant Society
P.O. Box 3452
Laramie, WY 82071

Early registration is due by 8 March

Hooray for Krascheninnikov

(Tune: "Hooray for Captain Spaulding," from the old Marx Brothers movie "Animal Crackers")

Oh, once it was *Eurotia* and then was *Ceratoides*,
That woolly plant that's good for sheep but isn't good for boidies,
But *Ceratoides* wasn't right and so they crossed it off,
And now that plant is named for Ivan Krascheninnikov.
Hooray for Krascheninnikov, Siberian explorer,
He sampled lots of larches with his incremental borer.
He traveled through Kamchatka where volcanoes belch and cough,
That good old vodka drinker, Ivan Krascheninnikov.
He found a *Fritillaria* in one volcanic area,
He also found a mushroom that was good old *A. muscaria*.
He saved them very carefully in his explorer's hat,
So think of good old Ivan when collecting winter fat. JB

(Editor's note: This poem has not been endorsed by the International Association for Plant Taxonomy or by Weight Watchers.)

"What's the use of their having names," the Gnat said, "if they won't answer to them?"
"No use to them," said Alice: "but it's useful to the people that name them, I suppose."
From "Alice in Wonderland" by Lewis Carroll

Wyoming Native Plant Society
PO Box 3452
Laramie, WY 82071

The Wyoming Native Plant Society, established in 1981, is a non-profit organization dedicated to encouraging the appreciation and conservation of the native flora and plant communities of Wyoming. The Society promotes education and research on native plants of the state through its newsletter, field trips, and annual student scholarship award. Membership is open to individuals, families, or organizations with an interest in Wyoming's flora. Members receive *Castilleja*, the Society's quarterly newsletter, and may take part in all of the Society's programs and projects, including the annual meeting/field trip held each summer. Dues are $7.50 annually.

To join the Wyoming Native Plant Society, return the membership form below to:

Wyoming Native Plant Society
PO Box 3452
Laramie, WY 82071

Name: _____
Address:
_____

_____

___ $7.50 Regular Membership
___ $15.00 Scholarship Supporting Member
($7.50 goes to the annual scholarship fund)